Missouri Department of Natural Resources

ENERGY NOTES

Issue No. 2 November 2004

Energy Notes is published by the Missouri Department of Natural Resources Energy Center to provide information to state employees on what can and is being done to reduce energy cost in the work place and in the home.

Reducing the Lighting Energy Load

Lighting energy conservation measures are usually the most cost-effective energy retrofits for buildings. They are relatively easy to implement and the energy savings are substantial, predictable and reliable. In state owned and leased buildings there are hundreds of thousands of square feet which could benefit from a lighting update.

Lighting uses more energy in a typical commercial office building than any other single use. It can vary from 25 – 50 percent of an office building's energy use. To reduce this cost and usually improve the lighting quality, there are several measures that can be done by all employees. These include the following:

- Turn lights off when leaving a room. This includes ceiling mounted fixtures as well as task lamps. If you are gone for more than two minutes, turn off the lights except for HID fixtures (such as warehouse lighting), which require a warm-up period.
- Wherever practical, use a task light instead of overhead lighting.
- Use daylighting when available by turning off lights near windows.
- Have maintenance staff delamp fixtures that produce a harsh glare or in areas that are over lighted.
- Avoid using incandescent light bulbs. Compact fluorescents use about one quarter of the energy and last up to ten times longer. Require purchasing procedures to procure the appropriate lamps.

For facility managers and building maintenance staff, lighting upgrades can play a major part in reducing a building's energy cost and improving the visual comfort of a space. Recommended practices for maintenance staff include:

- Retrofit T12 fluorescent lamps/magnetic ballast to T8 fluorescent/instant start electronic ballast. The use of one "instant start" electronic ballast with a two, three or four lamp fixture allows the fixture to be manually delamped since the lamps are all in parallel.
- Delamp fixtures in common areas such as hallways and open office areas where appropriate.
- In entrances, atriums and other common areas which have daylight coming through windows, delamp or install a photocell to turn off lights when adequate natural lighting is available.
- Install motion sensors to turn off lights in frequently unoccupied areas, such as restrooms, copy rooms, storage rooms, conference rooms and offices.
- Retrofit incandescent and fluorescent exit signs with long lasting low-energy LED exit signs.
- Clean dusty diffusers and lamps every six-12 months for improved lumen output.
- Install timers or photocells on outside lights.
- Check timers to ensure that settings are correct and clean photocells to ensure proper operation.
- When repainting, use light colors to reflect more light.
- For larger facilities, use an energy savings performance contract as a financing tool to implement a lighting upgrade in conjunction with other scheduled facility capital improvements/maintenance and repairs.

OA Facilities Management Gets Turned On by the "Big Turn Off"

With the recent state budget cutbacks, there was no doubt that red ink was in the future for most state agencies. The call went out to every state agency to reduce operational expenses. The Office of Administration (OA)/Division of Facilities Management used this motivation to create and implement the "BIG TURN OFF" campaign.

The goal of the campaign was to reduce energy consumption by 10 percent from FY2002 in 25 state office buildings with low cost/no cost projects. This was a large task that involved buildings in Jefferson City, St. Louis, Kansas City, Springfield, St. Joseph and other locations. These 25 buildings have a total of over three million square feet of office space and a combined utility expenditure of $5.3 million dollars in FY2002. The campaign included posters located in common areas of the building that encouraged employees to turn off their computers, printers and coffee pots when they go home.

Facilities Management maintenance staff removed every third light fixture in common areas such as atriums, lobbies and hallways. Incandescent lamps were replaced with energy-efficient compact fluorescent. The maintenance staff also shut down redundant elevators and ensured that escalators were turned off at the end of the business day. Operating schedules for lighting, fans and temperature controls were recalibrated to match the occupied periods of the buildings. Similar measures have been implemented in leased buildings in various parts of the state.

The results were savings of $396,372 in utility expenses from the base year, a 7.5 percent reduction in cost. Additional savings of $44,000 were realized in leased office space by primarily delamping over-lighted spaces. This approach of saving a dollar here and there resulted in a substantial savings of real money that can be redirected to other areas of the state budget. OA Facilities Management should be congratulated for dulling the knife of budget reductions.

Facilities Management is now working with the OA/Division of Design and Construction to implement an energy savings performance contract in which an energy services company (ESCO) will use energy savings to finance capital improvements that save energy dollars. Initial estimates of projects for the Truman and Wainwright State Office buildings from several energy services companies is a combined total of $5 million, which will be paid back over 15 years from energy savings. The energy audit phase of this project should start next month.

Energy Facts

Should standard fluorescent fixtures be turned off when not in use?
It is an urban legend that it costs more to turn off fluorescent lights than to leave them on. Today's lamps suffer very little damage from start-up, which is a nearly instantaneous event and never of a large enough magnitude to trip a circuit breaker, so there is little effect on energy use from startup.

Resources

DNR publications: Energy Efficient Lighting, http://www.dnr.mo.gov/oac/pub105.pdf
Fluorescent Lamps, http://www.dnr.mo.gov/oac/pub24.pdf

Web sites: http://www.iesna.org/ http://www.pegasusassociates.com/FAQs.html
http://www.lightsearch.com/ http://www.elflist.com/

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